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## **SEVENTH HANFORD SINGLE-SHELL TANK RETRIEVED**

*More waste removed from S-112 than all previous tanks combined*

**Richland, Washington** - - CH2M HILL has completed field work to remove radioactive and chemical sludge and other solid waste material from single-shell tank S-112. This is the seventh waste retrieval project from a single-shell tank at the Hanford Site under the regulatory requirements of the Tri-Party Agreement.

"S-112 has been one of our most challenging tanks because of the different waste forms it contained. The success of this project is due to the innovation and hard work of our people in the field. They did everything they could to keep this project moving forward," said Vic Pizzuto, Vice President of Closure Operations.

S-112 is a 758,000 gallon tank which was placed in service in 1952. At the time retrieval began, in September of 2003, the tank held over 614,000 gallons of waste. Several retrieval technologies were required over three-and-a-half years to meet regulatory requirements. Liquids were removed first using convention pumping techniques. Beneath the liquid was a thick layer of sludge which was removed using Modified Sluicing technology. Modified Sluicing used three nozzles that spray water at a pressure of about 100 pounds per square inch, with a flow rate of about a hundred gallons per minute. This is slightly less than the pressure and flow rate of a fire hose. The water dissolved much of the waste, allowing it to be easily pumped. Some of the remaining solids were broken up by the water and they too, were pumped from the tank.

When the limits of the modified sluicing technology were reached, a hardened layer of waste remained at the bottom of the tank known as the "heel." This layer included about 23,000 gallons of solids that would not yield to conventional retrieval techniques.

"Removing the heel became the next battle, but we found an innovative solution. We worked with TMR Associates of Colorado to develop a tool known as the Salt Mantis which was more effective than we ever envisioned for breaking up this hardened layer," Rick Raymond, Director, S Farm Closure Operations.

The Salt Mantis was inserted into the tank as a demonstration project to see if the technology would work to break up and mobilize the hardened material at the bottom of the tank. The technology uses extremely high pressure water (35,000 pounds per square inch) at a very low flow rate (just 5-6 gallons per minute) to blast the hardened material into small bits. It performed beyond expectations and effectively broke up all of the material it could reach and helped mobilize it so it could be pumped out of the tank. When the limits of that technology had been

reached, only about 2,400 gallons of residual waste remained in the tank, well below the 360 cubic foot limit established by the Tri-Party Agreement.

Removal of the waste from tank S-112 is part of an aggressive program initiated by the Department of Energy's Office of River Protection and CH2M HILL to remove liquids, sludges and saltcake waste from Hanford's 149 underground single-shell tanks and transfer the waste to newer, double-shell tanks where it will be safely stored until it can be prepared for treatment and disposal. CH2M HILL will continue to investigate and demonstrate new retrieval technologies to be deployed at future tank retrievals.

"S-112 is the first single-shell tank retrieved in Hanford's 200 West Area and the first to be completed outside of C Farm," said Office of River Protection Acting Manager Shirley J. Olinger. "This tank contained over 600,000 gallons of saltcake waste, which we knew from the onset would be a challenge to our retrieval crews in the field. ORP is pleased with the innovation, new technologies, safety-first attitude and solid conduct of operations that our workers brought to the retrieval of this single-shell tank."

Hanford's S Farm includes twelve tanks identical in size to S-112. Retrieval is actively under way in a sister tank, S-102, along with tank C-108 located in another part of the Hanford Site. Preparations are also under way to begin retrieval from three more tanks in the near future.

"The success we achieved with this tank will be carried over to other waste retrieval projects that are now underway, or scheduled in the near future. We learn from each retrieval project and apply those lessons to each new project which saves time and money without compromising safety," said Pizzuto.

CH2M HILL is a prime contractor to the Department of Energy's Office of River Protection (ORP) and is responsible for safely managing 53 million gallons of radioactive and chemical waste stored in 177 underground tanks. The 586-square-mile Hanford Site is located in south-central Washington State.

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